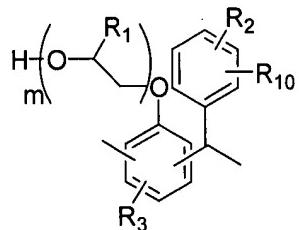
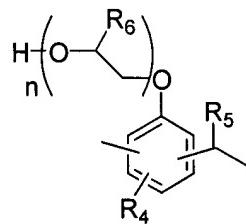


CLAIMS

1. An alkoxylated alkylphenol-arylaldehyde polymer comprising repeating units of formula



I



II

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wherein R₁ and R₆ are independently H, methyl or ethyl; R₂ and R₁₀ are independently H, C₁-C₁₈ alkyl, C₅-C₁₀ aryl, hydroxy, alkoxy or halogen; R₃ and R₄ are independently C₁-C₁₈ alkyl; R₅ is H, C₁-C₃ alkyl, or arylalkyl or a mixture thereof; and m and n are independently 1 to about 30, wherein
10 the alkoxyated alkylphenol-arylaldehyde polymer comprises 1 to about 40 monomer units of formula I, 0 to about 39 monomer units of formula II and the monomer units of formula I and II are present in a ratio about 1:10 to about 10:1.

2. The alkoxyated alkylphenol-arylaldehyde polymer of claim 1 wherein R₂ and R₁₀ are H.

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3. The alkoxyated alkylphenol-arylaldehyde polymer of claim 1 comprising about 3 to about 40 repeating units of formula I wherein the monomer unit of formula II is absent.

4. The alkoxyated alkylphenol-arylaldehyde polymer of claim 1 wherein m and n are independently 1 to about 20.

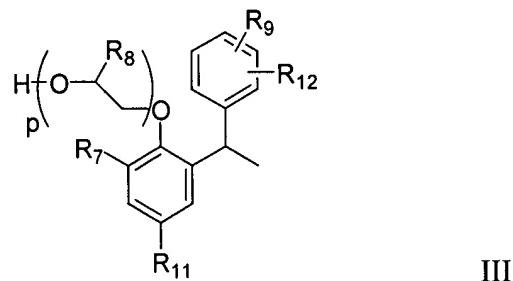
5. The alkoxyated alkylphenol-arylaldehyde polymer of claim 1 wherein R₃ and R₄ are independently C₄-C₁₂ alkyl.

6. The alkoxylated alkylphenol-arylaldehyde polymer of claim 1 wherein R₁ and R₆ are independently H or methyl.

7. The alkoxylated alkylphenol-arylaldehyde polymer of claim 1 wherein R₅ is H or methyl or a
5 mixture thereof.

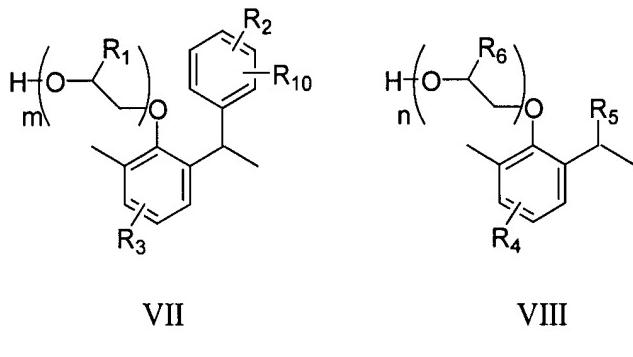
8. The alkoxylated alkylphenol-arylaldehyde polymer of claim 7 wherein R₅ is a mixture of H and methyl in a ratio of about 1:10 to about 10:1.

10 9. The alkoxylated alkylphenol-arylaldehyde polymer of claim 1 further comprising a terminal group of formula III



15 wherein R₇ and R₁₁ are independently C₁-C₁₈ alkyl; R₈ is H, methyl or ethyl; R₉ and R₁₂ are independently H, C₁-C₁₈ alkyl, C₅-C₁₀ aryl, hydroxy, alkoxy or halogen; and p is 1 to about 30.

10. An alkoxylated alkylphenol-arylaldehyde polymer according to claim 1 comprising repeating units of formula VII and VIII



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wherein R₁ and R₆ are independently H, methyl or ethyl; R₂ and R₁₀ are independently H, C₁-C₁₈ alkyl, C₅-C₁₀ aryl, hydroxy, alkoxy or halogen; R₃ and R₄ are independently C₁-C₁₈ alkyl; R₅ is H, C₁-C₃ alkyl, or arylalkyl or a mixture thereof; and m and n are independently 1 to about 30, wherein the alkoxylated alkylphenol-arylaldehyde polymer comprises 1 to about 40 monomer units of formula VII, 0 to about 39 monomer units of formula VIII and the monomer units of formula VII and VIII are present in a ratio about 1:10 to about 10:1.

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11. The alkoxylated alkylphenol-arylaldehyde polymer of claim 10 comprising about 3 to about 40 repeating units of formula VII wherein the monomer unit of formula VIII is absent.

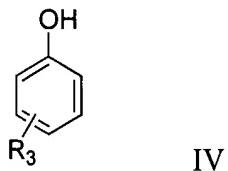
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12. The alkoxylated alkylphenol-arylaldehyde polymer of claim 11 comprising about 3 to about 30 repeating units of formula VII wherein m is 1 to about 20; R₁ is H or methyl; R₂ and R₁₀ are H; and R₃ is C₄-C₁₂ alkyl.

20 13. A demulsifier composition for resolving water-in-oil emulsions comprising one or more alkoxylated alkylphenol-arylaldehyde polymers according to claim 1.

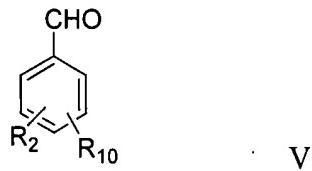
14. A method of preparing the alkoxylated alkylphenol-arylaldehyde polymer of claim 1 comprising:

- i) reacting one or more alkylphenols of formula IV



wherein R₃ is H or straight or branched C₁-C₁₈ alkyl, with about 0.05 to about 1.2 molar equivalents of a arylaldehyde compound of formula V

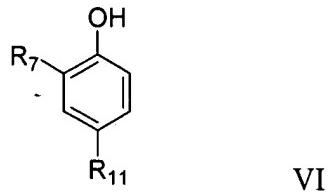
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wherein R₂ and R₁₀ are independently H, straight or branched C₁-C₁₈ alkyl, C₅-C₁₀ aryl, hydroxy, alkoxy or halogen and optionally about 0.05 to about 0.95 molar equivalents of one or more aliphatic aldehydes of formula R₅CHO wherein R₅ is H, C₁-C₃ alkyl, or arylalkyl to form an alkylphenol-15 arylaldehyde polymer; and

- ii) reacting the alkylphenol-arylaldehyde polymer with about 1 to about 30 molar equivalents of one or more alkylene oxides.

15. The method of claim 14 wherein the alkylphenol comprises a mixture of the alkylphenol of formula IV and a dialkylphenol of formula VI



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wherein R₇ and R₁₁ are independently C₁-C₁₈ alkyl.

16. A method of resolving a water-in-oil emulsion comprising adding to the emulsion an effective demulsifying amount of one or more alkoxyLATED alkylphenol-arylaldehyde polymers
10 according to claim 1.

17. The method of claim 16 wherein the water-in-oil emulsion is a crude oil emulsion.

18. The method of claim 17 wherein the crude oil emulsion is a refinery desalting emulsion.

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19. The method of claim 17 wherein the crude oil emulsion is a crude oil production emulsion.